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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/809,297	03/25/2004	Kiyoshi Chikamatsu	40020852-02	1500

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EXAMINER

WEST, JEFFREY R

ART UNIT	PAPER NUMBER
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2857

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	02/23/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/809,297

Applicant(s)

CHIKAMATSU, KIYOSHI

Examiner

Jeffrey R. West

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 November 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3,6 and 8 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3,6 and 8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 May 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by U.S.

Patent No. 5,808,463 to Nagano.

With respect to claim 1, Nagano discloses a vector-detecting apparatus that detects the in-phase component and the quadrature-phase component of a pre-determined frequency signal, said apparatus comprising a frequency converter for converting said pre-determined frequency signal to a signal under test (column 5, lines 6-12), a first digital filter, and a second digital filter (column 6, line 34), wherein said first and second filters filter the output signal of said frequency converter and whose impulse responses are orthogonal to each other (column 5, lines 30-34), and wherein the output of said first filter is regarded as the in-phase component of said signal under test, and the output of said second filter is regarded as the quadrature-phase component of said signal under test (column 5, lines 34-38) and wherein said first filter and said second filter are digital filters (column 5, lines 33-35).

Nagano also discloses that the response of said first filter is weighted by the sine function of the same frequency as said signal under test after frequency conversion by said frequency converter, and the impulse response of said second filter is

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weighted by the cosine function of the same frequency of the same signal under test after frequency conversion by the frequency converter, wherein the first and second filters are single filters (column 5, lines 53-64).

Nagano further discloses that the ratio of the frequency of said pre-determined frequency signal and said signal under test is higher than 3 (column 5, lines 22-29 and column 8, lines 17-32) and, since it is considered to be inherent that in the mixer configuration of Figure 3 that the frequency of the local signal inputted into the mixer has a frequency in the range of the pre-determined frequency signal in order to obtain the desired low frequency of the signal under test, Nagano further discloses that a ratio of the frequency of a local signal inputted into said frequency converter and said signal under test is also higher than 3 (Figure 3, column 5, lines 22-29 and column 8, lines 17-32).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nagano in view of U.S. Patent No. 5,856,796 to Akune et al.

As noted above, the invention of Nagano teaches many of the features of the claimed invention and while the invention of Nagano does teach that the ratio of the

frequency of said pre-determined frequency signal and said signal under test is higher than 3 (column 5, lines 22-29 and column 8, lines 17-32) and, since it is considered to be inherent that in the mixer configuration of Figure 3 that the frequency of the local signal inputted into the mixer has a frequency in the range of the pre-determined frequency signal in order to obtain the desired low frequency of the signal under test, Nagano further teaches that a ratio of the frequency of a local signal inputted into said frequency converter and said signal under test is also higher than 3 (Figure 3, column 5, lines 22-29 and column 8, lines 17-32), Nagano does not explicitly indicate that the ratios are integers.

Akune teaches a sampling rate converting method and apparatus for performing frequency conversion (column 2, lines 25-37) wherein the frequency conversion is performed to obtain signals that are integer ratios of each other (column 3, lines 14-33).

It would have been obvious to one having ordinary skill in the art to modify the invention of Nagano to explicitly indicate that the ratios are integers, as taught by Akune, because, as suggested by Akune, the combination would have improved the system of Nagano by performing the frequency conversion using integer ratios to obtain the intermediate frequency signal thereby simplifying the process for obtaining the intermediate frequency as well as further processing by eliminating the production of jitter (column 2, lines 25-37).

5. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over

Nagano in view of U.S. Patent No. 4,888,701 to Wakasugi et al.

As noted above, the invention of Nagano teaches all of the features of the claimed invention except for explicitly stating that the apparatus of Nagano is used as part of an impedance measuring apparatus.

Wakasugi teaches an apparatus for measuring a vector voltage ratio including a plurality of phase detectors connected to a plurality of A/D converters (column 3, lines 2-6) for detecting in-phase and quadrature-phase vectors (i.e. vectors with phase components 90 degrees from each other) (column 3, lines 29-37) for use in measuring impedance (column 4, lines 16-30).

It would have been obvious to one having ordinary skill in the art to modify the invention of Nagano to explicitly state that the apparatus of Nagano is used as part of an impedance measuring apparatus because the invention of Wakasugi suggests that impedance measuring apparatuses require accurate measurements of in-phase and quadrature-components (column 1, lines 6-25) and therefore the combination would have provided a wider variety of applications of the invention of Nagano by applying the in-phase and quadrature phase detection means to an impedance measuring apparatus.

Further, the limitation specifying the use of the apparatus of Nagano as part of an impedance measuring apparatus is considered to be a recitation of intended use. It has been held that a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art

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structure is capable of performing the intended use, then it meets the claim. In this case, since the structure of Nagano could be used in any of a plurality of apparatuses, including an impedance measuring apparatus, it meets the claim.

Further still, Applicant admits as Prior Art in the Background of the Invention that it is well-known in the art to use in-phase and quadrature detection in impedance measuring devices. Therefore, it would have been obvious to one having ordinary skill in the art to conform to what is common in the art by applying the method of Nagano to a conventional impedance measuring apparatus. *When applicant states that something is prior art, it is taken as being available as prior art against the claims. Admitted prior art can be used in obviousness rejections. In re Nomiya, 509 F.2d 566, 184 USPQ 607, 610 (CCPA 1975).*

6. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nagano in view of Akune and further in view of U.S. Patent No. 4,888,701 to Wakasugi et al.

As noted above, the invention of Nagano and Akune teaches all of the features of the claimed invention except for explicitly stating that the apparatus of Nagano and Akune is used as part of an impedance measuring apparatus.

Wakasugi teaches an apparatus for measuring a vector voltage ratio including a plurality of phase detectors connected to a plurality of A/D converters (column 3, lines 2-6) for detecting in-phase and quadrature-phase vectors (i.e. vectors with

phase components 90 degrees from each other) (column 3, lines 29-37) for use in measuring impedance (column 4, lines 16-30).

It would have been obvious to one having ordinary skill in the art to modify the invention of Nagano and Akune to explicitly state that the apparatus of Nagano and Akune is used as part of an impedance measuring apparatus because the invention of Wakasugi suggests that impedance measuring apparatuses require accurate measurements of in-phase and quadrature-components (column 1, lines 6-25) and therefore the combination would have provided a wider variety of applications of the invention of Nagano and Akune by applying the in-phase and quadrature phase detection means to an impedance measuring apparatus.

Further, the limitation specifying the use of the apparatus of Nagano and Akune as part of an impedance measuring apparatus is considered to be a recitation of intended use. It has been held that a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In this case, since the structure of Nagano and Akune could be used in any of a plurality of apparatuses, including an impedance measuring apparatus, it meets the claim.

Further still, Applicant admits as Prior Art in the Background of the Invention that it is well-known in the art to use in-phase and quadrature detection in impedance measuring devices. Therefore, it would have been obvious to one having ordinary

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skill in the art to conform to what is common in the art by applying the method of Nagano and Akune to a conventional impedance measuring apparatus. *When applicant states that something is prior art, it is taken as being available as prior art against the claims. Admitted prior art can be used in obviousness rejections. In re Nomiya, 509 F.2d 566, 184 USPQ 607, 610 (CCPA 1975).*

Response to Arguments

7. Applicant's arguments with respect to claims 1, 3, 6, and 8 have been considered but are moot in view of the new ground(s) of rejection.

The Examiner does note, however, that Applicant has not sufficiently explained why the filters "405" and "406" are not properly considered to be "single" filters. Figure 4 of Nagano clearly indicates that filters "405" and "406" are separate/single filters and, without any discussion in the instant specification describing what constitutes a "single" filter, the Examiner maintains the interpretation of Nagano provided above.

The Examiner also notes that Nagano discloses, in column 5, lines 22-29, that the predetermined frequency signal is in the range of several ten MHz and the signal under test is about 220 kHz. Therefore, the ratio of predetermined frequency signal and the signal under test is greater than 2. The Examiner also asserts that in order for the mixer to reduce the frequency of the predetermined frequency signal to 220 kHz, the frequency of the local signal inputted into the mixer must have a frequency in the range of the pre-determined frequency and therefore a ratio of the frequency

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of a local signal inputted into said frequency converter and the signal under test is also higher than 3.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to Applicant's disclosure.

U.S. Patent Application Publication No. 2004/0070766 to Szafraniec teaches a method and apparatus for a Jones Vector based heterodyne optical polarimeter including the use of two orthogonal filters to determined in-phase and quadrature components.

U.S. Patent No. 6,724,832 to Hershberger teaches a vestigial sideband generator including two low-pass filters for producing folded orthogonal base-band components of I (i.e. in-phase) and Q (i.e. quadrature).

U.S. Patent No. 6,704,324 to Holmquist teaches an apparatus and method for transmission of voice band signals over a DSL line including determining in-phase and quadrature components in accordance with orthogonal Hilbert pass-band filters.

U.S. Patent No. 6,928,060 to Kikuchi teaches audio data communication employing frequency conversion defined by an integer ratio.

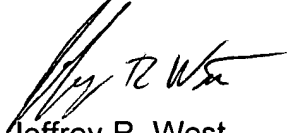
ATIS, "Mixer" defines a mixer as a device "that accepts as its input two different frequencies (signals) and presents at its output...(b) a signal equal in frequency to the difference between the frequencies of the inputs signals".

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9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeffrey R. West whose telephone number is (571)272-2226. The examiner can normally be reached on Monday through Friday, 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marc S. Hoff can be reached on (571)272-2216. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Jeffrey R. West
Examiner – AU 2857

February 19, 2007